

SEQUENCE LISTING

<110> The University of Virginia Patent Foundation
 Lannigan-Macara, Deborah A.
 5 Henrich, Lorin M.
 Smith, Jeffrey A.

<120> ERK7 and ERK8, Novel Diagnostic Markers for Cancer

10 <130> 00910-02

<150> US 60478,992
 <151> 2003-06-17

15 <160> 6

<170> PatentIn version 3.1

<210> 1
 20 <211> 484
 <212> PRT
 <213> Homo sapiens

<400> 1

25 Met Cys Thr Val Val Asp Pro Arg Ile Val Arg Arg Tyr Leu Leu Arg
 1 5 10 15

30 Arg Gln Leu Gly Gln Gly Ala Tyr Gly Ile Val Trp Lys Ala Val Asp
 20 25 30

35 Arg Arg Thr Gly Glu Val Val Ala Ile Lys Lys Ile Phe Asp Ala Phe
 35 40 45

40 Arg Asp Lys Thr Asp Ala Gln Arg Thr Phe Arg Glu Ile Thr Leu Leu
 50 55 60

Gln Glu Phe Gly Asp His Pro Asn Ile Ile Ser Leu Leu Asp Val Ile
 65 70 75 80

45 Arg Ala Glu Asn Asp Arg Asp Ile Tyr Leu Val Phe Glu Phe Met Asp
 85 90 95

50 Thr Asp Leu Asn Ala Val Ile Arg Lys Gly Gly Leu Leu Gln Asp Val
 100 105 110

His Val Arg Ser Ile Phe Tyr Gln Leu Leu Arg Ala Thr Arg Phe Leu
 115 120 125
 5
 His Ser Gly His Val Val His Arg Asp Gln Lys Pro Ser Asn Val Leu
 130 135 140
 10
 Leu Asp Ala Asn Cys Thr Val Lys Leu Cys Asp Phe Gly Leu Ala Arg
 145 150 155 160
 15
 Ser Leu Gly Asp Leu Pro Glu Gly Pro Glu Asp Gln Ala Val Thr Glu
 165 170 175
 20
 Tyr Val Ala Glu Asp Leu Leu Ala Leu Gly Ser Gly Cys Arg Ala Ser
 180 185 190
 25
 Val Leu His Gln Leu Gly Ser Arg Pro Arg Gln Thr Leu Asp Ala Leu
 195 200 205
 30
 Leu Pro Pro Asp Thr Ser Pro Glu Ala Leu Asp Leu Leu Arg Arg Leu
 210 215 220
 35
 His Pro Tyr Val Gln Arg Phe His Cys Pro Ser Asp Glu Trp Ala Arg
 245 250 255
 40
 Glu Ala Asp Val Arg Pro Arg Ala His Glu Gly Val Gln Leu Ser Val
 260 265 270
 45
 Pro Glu Tyr Arg Ser Arg Val Tyr Gln Met Ile Leu Glu Cys Gly Gly
 275 280 285
 50
 Ser Ser Gly Thr Ser Arg Glu Lys Gly Pro Glu Gly Val Ser Pro Ser
 290 295 300
 Gln Ala His Leu His Lys Pro Arg Ala Asp Pro Gln Leu Pro Ser Arg
 305 310 315 320

Thr Pro Val Gln Gly Pro Arg Pro Arg Pro Gln Ser Ser Pro Gly His
 325 330 335
 5 Asp Pro Ala Glu His Glu Ser Pro Arg Ala Ala Lys Asn Val Pro Arg
 340 345 350
 10 Gln Asn Ser Ala Pro Leu Leu Gln Thr Ala Leu Leu Gly Asn Gly Glu
 355 360 365
 15 Arg Pro Pro Gly Ala Lys Glu Ala Pro Pro Leu Thr Leu Ser Leu Val
 370 375 380
 20 Lys Pro Ser Gly Arg Gly Ala Ala Pro Ser Leu Thr Ser Gln Ala Ala
 385 390 395 400
 Ala Gln Val Ala Asn Gln Ala Leu Ile Arg Gly Asp Trp Asn Arg Gly
 405 410 415
 25 Gly Gly Val Arg Val Ala Ser Val Gln Gln Val Pro Pro Arg Leu Pro
 420 425 430
 30 Pro Glu Ala Arg Pro Gly Arg Arg Met Phe Ser Thr Ser Ala Leu Gln
 435 440 445
 35 Gly Ala Gln Gly Gly Ala Arg Ala Leu Leu Gly Gly Tyr Ser Gln Ala
 450 455 460
 40 Tyr Gly Thr Val Cys His Ser Ala Leu Gly His Leu Pro Leu Leu Glu
 465 470 475 480
 Gly His His Val
 45
 <210> 2
 <211> 547
 <212> PRT
 <213> Rattus norvegicus
 50
 <400> 2

1	Met	Cys	Ala	Ala	Glu	Val	Asp	Arg	His	Val	Ser	Gln	Arg	Tyr	Leu	Ile	
				5						10					15		
5	Lys	Arg	Arg	Leu	Gly	Lys	Gly	Ala	Tyr	Gly	Ile	Val	Trp	Lys	Ala	Met	
				20					25					30			
10	Asp	Arg	Arg	Thr	Gly	Glu	Val	Val	Ala	Ile	Lys	Lys	Ile	Phe	Asp	Ala	
			35					40					45				
15	Phe	Arg	Asp	Gln	Thr	Asp	Ala	Gln	Arg	Thr	Phe	Arg	Glu	Ile	Met	Leu	
	50						55					60					
20	Leu	Arg	Glu	Phe	Gly	Gly	His	Pro	Asn	Ile	Ile	Arg	Leu	Leu	Asp	Val	
	65				70						75				80		
25	Ile	Pro	Ala	Lys	Asn	Asp	Arg	Asp	Ile	Tyr	Leu	Val	Phe	Glu	Ser	Met	
				85						90					95		
30	Asp	Thr	Asp	Leu	Asn	Ala	Val	Ile	Gln	Lys	Gly	Arg	Leu	Leu	Glu	Asp	
				100					105					110			
35	Ile	His	Lys	Arg	Cys	Ile	Phe	Tyr	Gln	Leu	Leu	Arg	Ala	Thr	Lys	Phe	
			115					120					125				
40	Ile	His	Ser	Gly	Arg	Val	Ile	His	Arg	Asp	Gln	Lys	Pro	Ala	Asn	Val	
	130						135					140					
45	Leu	Leu	Asp	Ala	Ala	Cys	Arg	Val	Lys	Leu	Cys	Asp	Phe	Gly	Leu	Ala	
	145					150					155				160		
50	Arg	Ser	Leu	Ser	Asp	Phe	Pro	Glu	Gly	Pro	Gly	Gly	Gln	Ala	Leu	Thr	
				165						170					175		
55	Glu	Tyr	Val	Ala	Thr	Arg	Trp	Tyr	Arg	Ala	Pro	Glu	Val	Leu	Leu	Ser	
				180				185						190			
60	Ser	Arg	Trp	Tyr	Thr	Pro	Gly	Val	Asp	Met	Trp	Ser	Leu	Gly	Cys	Ile	
			195					200					205				

	Leu	Gly	Glu	Met	Leu	Arg	Gly	Gln	Pro	Leu	Phe	Pro	Gly	Thr	Ser	Thr	
	210						215					220					
5	Phe	His	Gln	Leu	Glu	Leu	Ile	Leu	Glu	Thr	Ile	Pro	Leu	Pro	Ser	Met	
	225					230					235					240	
10	Glu	Glu	Leu	Gln	Gly	Leu	Gly	Ser	Asp	Tyr	Ser	Ala	Leu	Ile	Leu	Gln	
					245					250					255		
15	Asn	Leu	Gly	Ser	Arg	Pro	Arg	Gln	Thr	Leu	Asp	Ala	Leu	Leu	Pro	Pro	
				260					265					270			
20	Asp	Thr	Pro	Pro	Glu	Ala	Leu	Asp	Leu	Leu	Lys	Arg	Leu	Leu	Ala	Phe	
			275					280					285				
25	Ala	Pro	Asp	Lys	Arg	Leu	Ser	Ala	Glu	Gln	Ala	Leu	Gln	His	Pro	Tyr	
	290						295					300					
30	Val	Gln	Arg	Phe	His	Cys	Pro	Asp	Arg	Glu	Trp	Thr	Arg	Gly	Ser	Asp	
	305					310					315					320	
35	Val	Arg	Leu	Pro	Val	His	Glu	Gly	Asp	Gln	Leu	Ser	Ala	Pro	Glu	Tyr	
					325					330					335		
40	Arg	Asn	Arg	Leu	Tyr	Gln	Met	Ile	Leu	Glu	Arg	Arg	Arg	Asn	Ser	Arg	
				340					345					350			
45	Ser	Pro	Arg	Glu	Glu	Asp	Leu	Gly	Val	Val	Ala	Ser	Arg	Ala	Glu	Leu	
			355					360					365				
50	Arg	Ala	Ser	Gln	Arg	Gln	Ser	Leu	Lys	Pro	Gly	Val	Leu	Pro	Gln	Val	
	370						375					380					
55	Leu	Ala	Glu	Thr	Pro	Ala	Arg	Lys	Arg	Gly	Pro	Lys	Pro	Gln	Asn	Gly	
	385					390					395					400	
60	His	Gly	His	Asp	Pro	Glu	His	Val	Glu	Val	Arg	Arg	Gln	Ser	Ser	Asp	
					405					410					415		

Pro Leu Tyr Gln Leu Pro Pro Pro Gly Ser Gly Glu Arg Pro Pro Gly
 420 425 430

5 Ala Thr Gly Glu Pro Pro Ser Ala Pro Ser Gly Val Lys Thr His Val
 435 440 445

10 Arg Ala Val Ala Pro Ser Leu Thr Ser Gln Ala Ala Ala Gln Ala Ala
 450 455 460

15 Asn Gln Pro Leu Ile Arg Ser Asp Pro Ala Arg Gly Gly Gly Pro Arg
 465 470 475 480

20 Ala Val Gly Ala Arg Arg Val Pro Ser Arg Leu Pro Arg Glu Ala Pro
 485 490 495

Glu Pro Arg Pro Gly Arg Arg Met Phe Gly Ile Ser Val Ser Gln Gly
 500 505 510

25 Ala Gln Gly Ala Ala Arg Ala Ala Leu Gly Gly Tyr Ser Gln Ala Tyr
 515 520 525

30 Gly Thr Val Cys Arg Ser Ala Leu Gly Arg Leu Pro Leu Leu Pro Gly
 530 535 540

35 Pro Arg Ala
 545

40 <210> 3
 <211> 549
 <212> PRT
 <213> Mus musculus
 <400> 3

45 Met Cys Ala Ala Glu Val Asp Arg His Val Ala Gln Arg Tyr Leu Ile
 1 5 10 15

50 Lys Arg Arg Leu Gly Lys Gly Ala Tyr Gly Ile Val Trp Lys Ala Met
 20 25 30

Asp Arg Arg Thr Gly Glu Val Val Ala Ile Lys Lys Ile Phe Asp Ala
 35 40 45
 5 Phe Arg Asp Gln Ile Asp Ala Gln Arg Thr Phe Arg Glu Ile Met Leu
 50 55 60
 10 Leu Lys Glu Phe Gly Gly His Pro Asn Ile Ile Arg Leu Leu Asp Val
 65 70 75 80
 15 Ile Pro Ala Lys Asn Asp Arg Asp Ile Tyr Leu Val Phe Glu Ser Met
 85 90 95
 20 Asp Thr Asp Leu Asn Ala Val Ile Gln Lys Gly Arg Leu Leu Lys Asp
 100 105 110
 25 Ile His Lys Arg Cys Ile Phe Tyr Gln Leu Leu Arg Ala Thr Lys Phe
 115 120 125
 30 Ile His Ser Gly Arg Val Ile His Arg Asp Gln Lys Pro Ala Asn Val
 130 135 140
 35 Leu Leu Asp Ser Ala Cys Arg Val Lys Leu Cys Asp Phe Gly Leu Ala
 145 150 155 160
 40 Arg Ser Leu Gly Asp Leu Pro Glu Gly Pro Gly Gly Gln Ala Leu Thr
 165 170 175
 45 Glu Tyr Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu Val Leu Leu Ser
 180 185 190
 50 Ser Arg Trp Tyr Thr Pro Gly Val Asp Met Trp Ser Leu Gly Cys Ile
 195 200 205
 55 Leu Gly Glu Met Leu Arg Gly Gln Pro Leu Phe Pro Gly Thr Ser Thr
 210 215 220
 60 Phe His Gln Leu Glu Leu Ile Leu Lys Thr Ile Pro Leu Pro Ser Met
 225 230 235 240

Glu Glu Leu Gln Asp Leu Gly Ser Asp Tyr Ser Ala Leu Ile Leu Gln
 245 250 255
 5 Asn Leu Gly Ser Arg Pro Gln Gln Thr Leu Asp Ala Leu Leu Pro Pro
 260 265 270
 10 Asp Thr Pro Pro Glu Ala Leu Asp Leu Leu Lys Arg Leu Leu Ala Phe
 275 280 285
 15 Ala Pro Asp Lys Arg Leu Ser Ala Glu Gln Ala Leu Gln His Pro Tyr
 290 295 300
 Val Gln Arg Phe His Cys Pro Asp Arg Glu Trp Ala Arg Glu Ser Asp
 305 310 315 320
 20 Val Arg Leu Pro Val His Glu Gly Asp Gln Leu Ser Ala Pro Glu Tyr
 325 330 335
 25 Arg Lys Arg Leu Tyr Gln Ile Ile Leu Glu Gln Ser Gly Asn Ser Arg
 340 345 350
 30 Ser Pro Arg Glu Glu Gly Leu Gly Val Val Ala Ser Arg Ala Glu Leu
 355 360 365
 35 Arg Ala Ser Pro Ala Arg Thr Gln Ser Leu Lys Ser Gly Val Leu Pro
 370 375 380
 Gln Val Pro Ala Glu Thr Pro Ala Arg Lys Arg Gly Pro Lys Pro Pro
 385 390 395 400
 40 Arg Ser Pro Gly His Asp Pro Glu His Val Glu Val Arg Arg Gln Ser
 405 410 415
 45 Ser Asp Pro Leu Phe Gln Leu Pro Pro Pro Gly Arg Gly Glu Arg Pro
 420 425 430
 50 Pro Gly Ala Thr Gly Gln Pro Pro Ser Ala Pro Ser Gly Val Lys Thr
 435 440 445

Gln Val Arg Ala Met Ala Pro Ser Leu Thr Ser Gln Ala Glu Ala Gln
 450 455 460

5 Ala Ala Asn Gln Ala Leu Ile Arg Ser Asp Pro Ala Arg Gly Gly Gly
 465 470 475 480

10 Pro Arg Ala Val Gly Ala Arg Arg Val Pro Ser Arg Leu Pro Arg Glu
 485 490 495

15 Ala Pro Glu Pro Arg Pro Gly Arg Arg Met Phe Gly Ile Ser Val Ser
 500 505 510

Gln Gly Ala Gln Gly Ala Ala Arg Ala Ala Leu Gly Gly Tyr Ser Gln
 515 520 525

20 Ala Tyr Gly Thr Val Cys Arg Ser Ala Leu Gly Arg Leu Pro Leu Leu
 530 535 540

25 Pro Gly Pro Arg Ala
 545

30 <210> 4
 <211> 16
 <212> PRT
 <213> Rattus norvegicus

35 <400> 4
 Cys Arg Ser Ala Leu Gly Arg Leu Pro Leu Leu Pro Gly Pro Arg Ala
 1 5 10 15

40 <210> 5
 <211> 7
 <212> PRT
 <213> Rattus norvegicus

45 <400> 5
 Cys Gln Ala Leu Thr Glu Tyr
 1 5

50 <210> 6
 <211> 16

<212> PRT
<213> Homo sapiens

<400> 6

5

Lys	Asn	Ile	Val	Thr	Pro	Arg	Thr	Pro	Pro	Pro	Ser	Gln	Gly	Lys	Gly
1				5					10					15	